

CALFED

**TECHNICAL REPORT
AFFECTED ENVIRONMENT**

SUPPLEMENT TO FISHERIES & AQUATIC RESOURCES

DRAFT

March 1998



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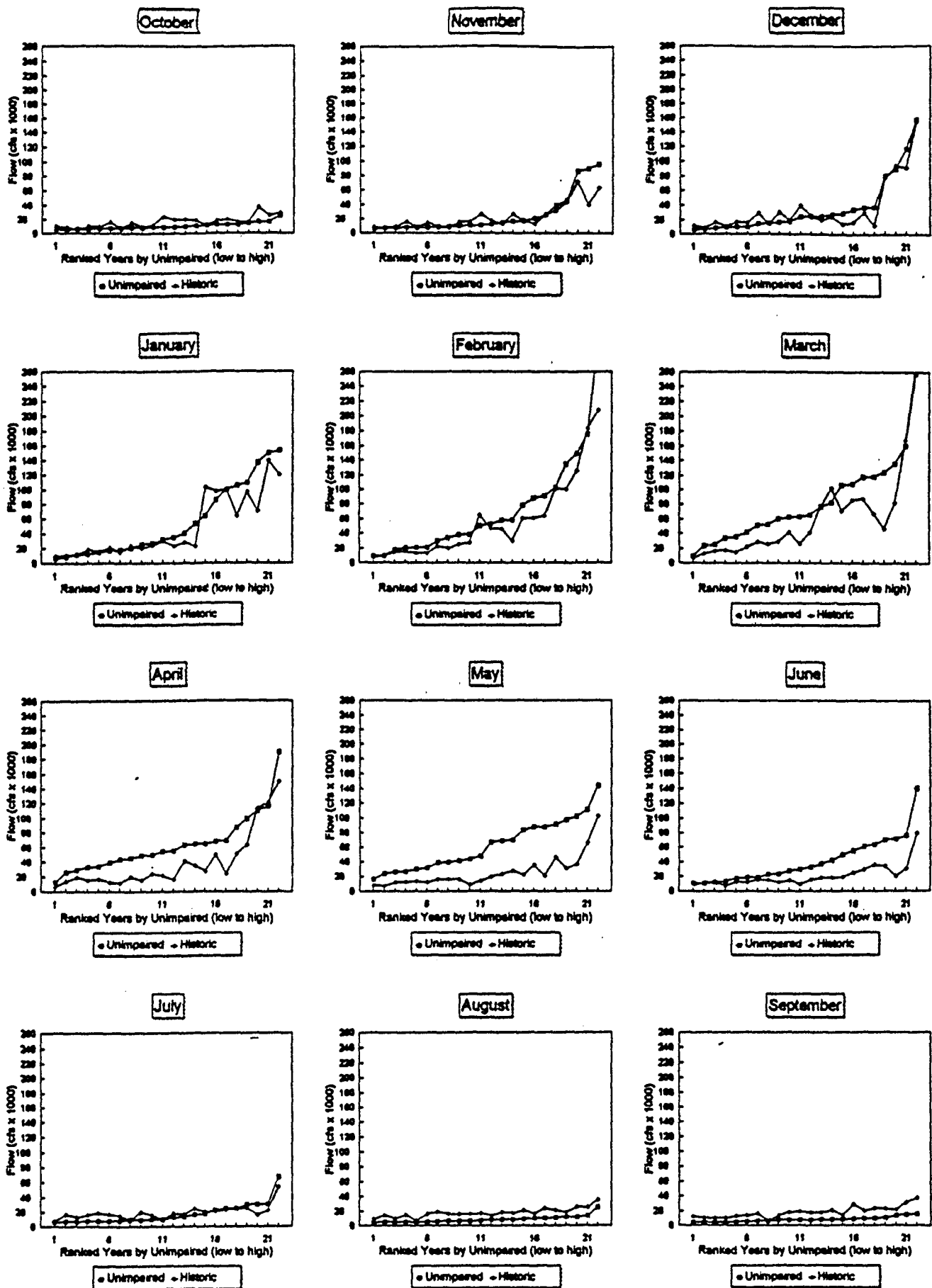
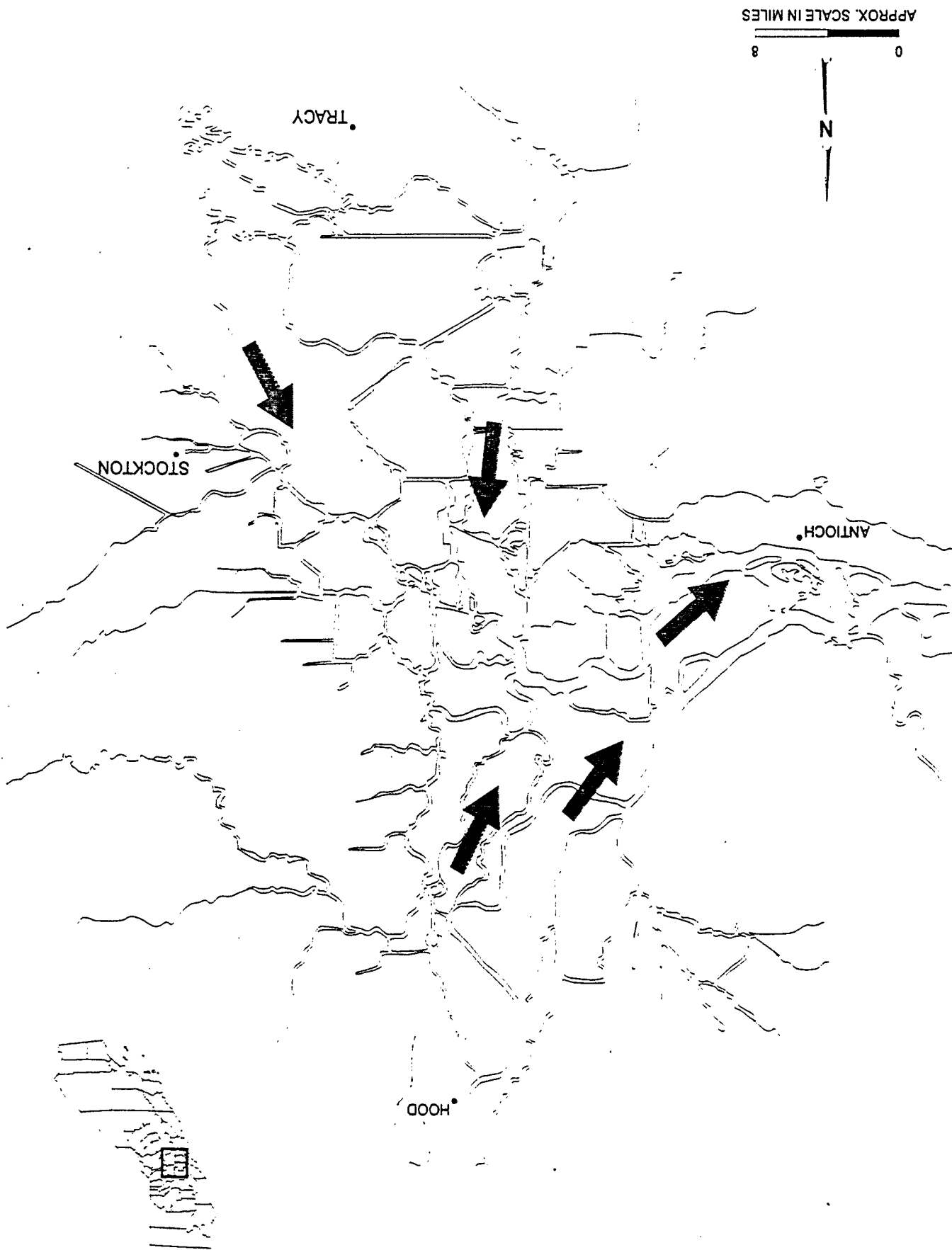


Figure S-1. Delta Inflow under Unimpaired and Historical Conditions (1972-1993)

Figure S-2. Net Flow Direction in Delta Channels Without Diversions and Export



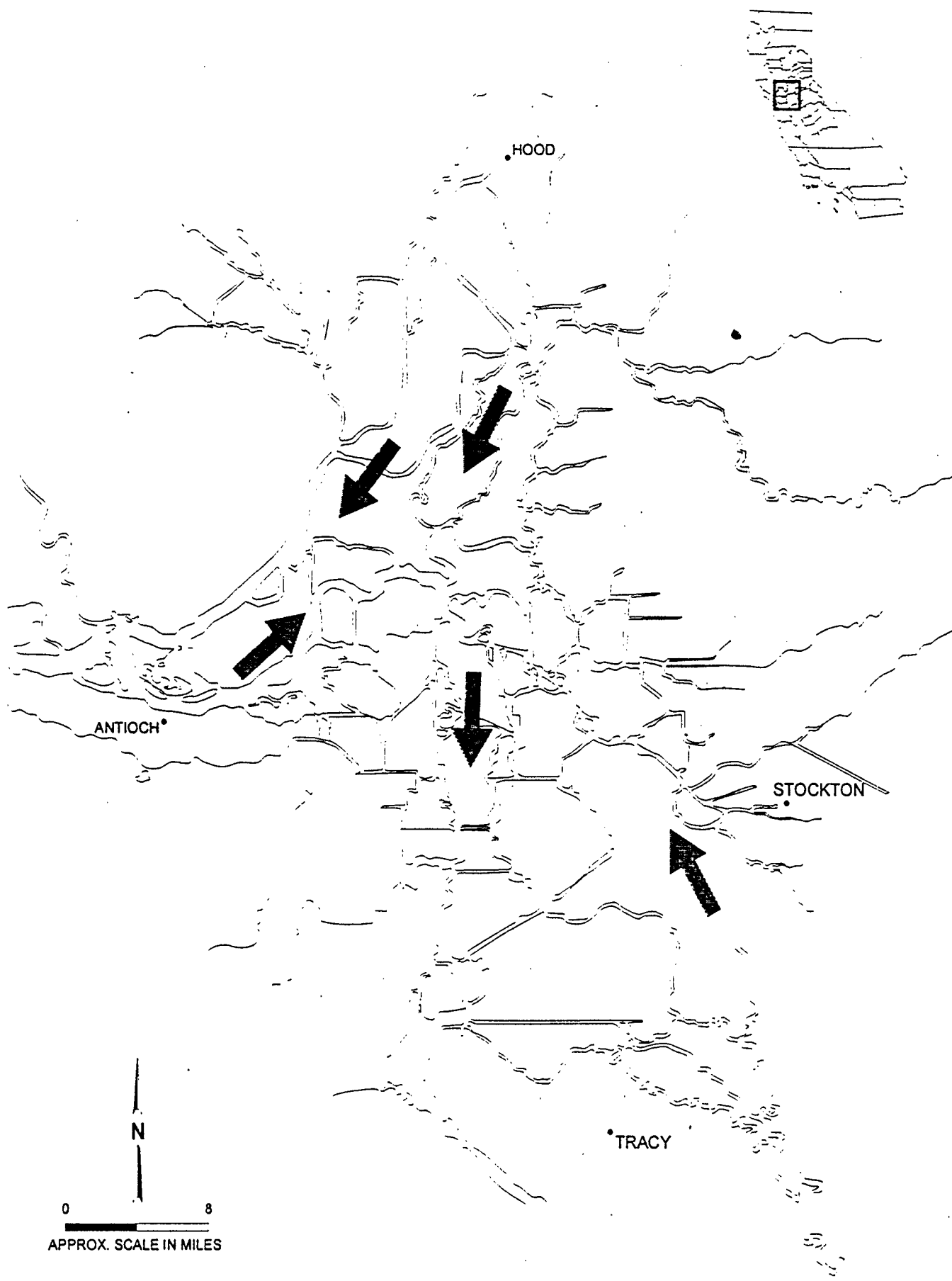


Figure S-3. Net Flow Direction in Delta Channels with Existing Diversions and Export under Low Flow Conditions

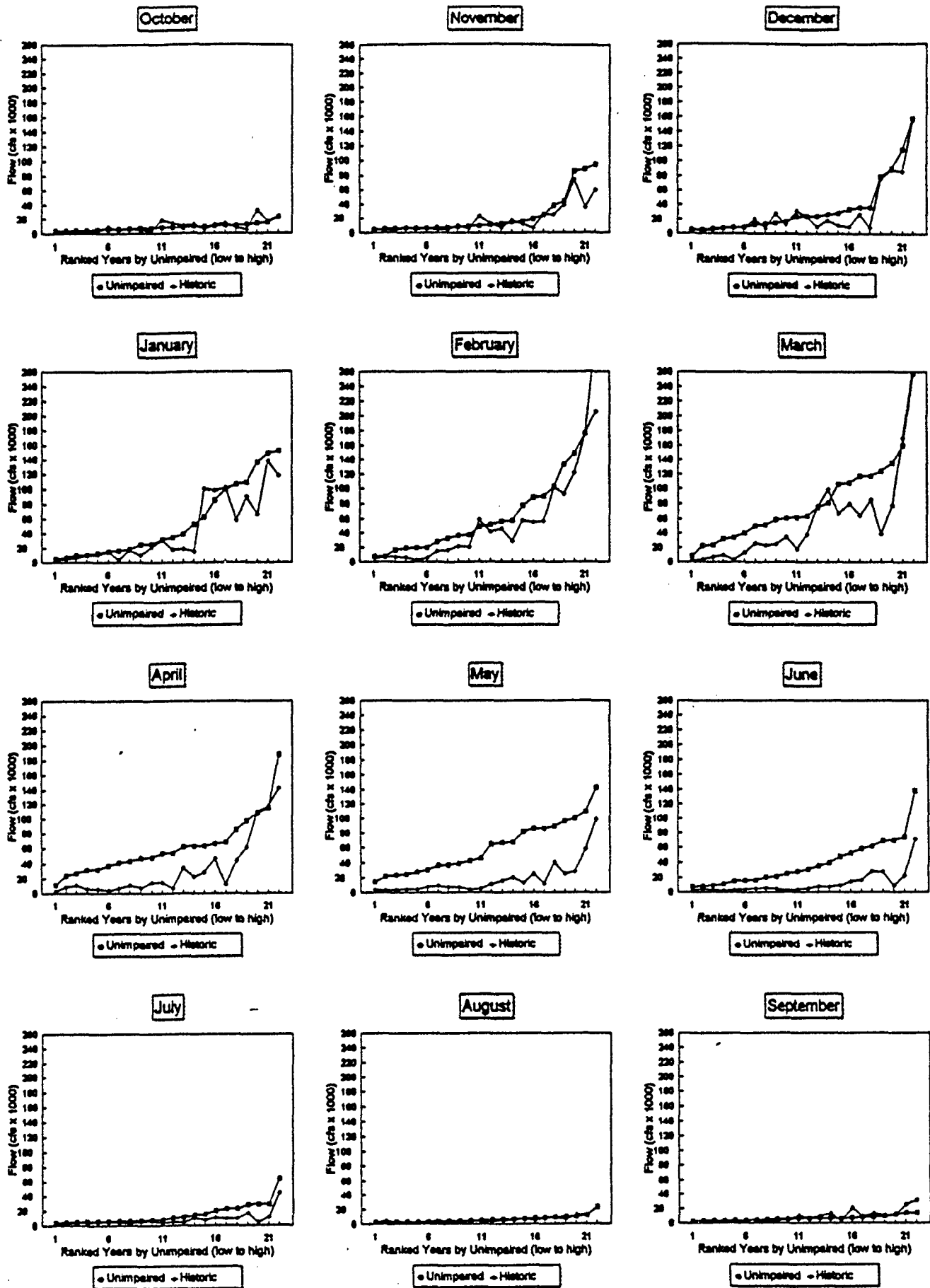


Figure S-4. Delta Outflow under Unimpaired and Historical Conditions (1972-1993)

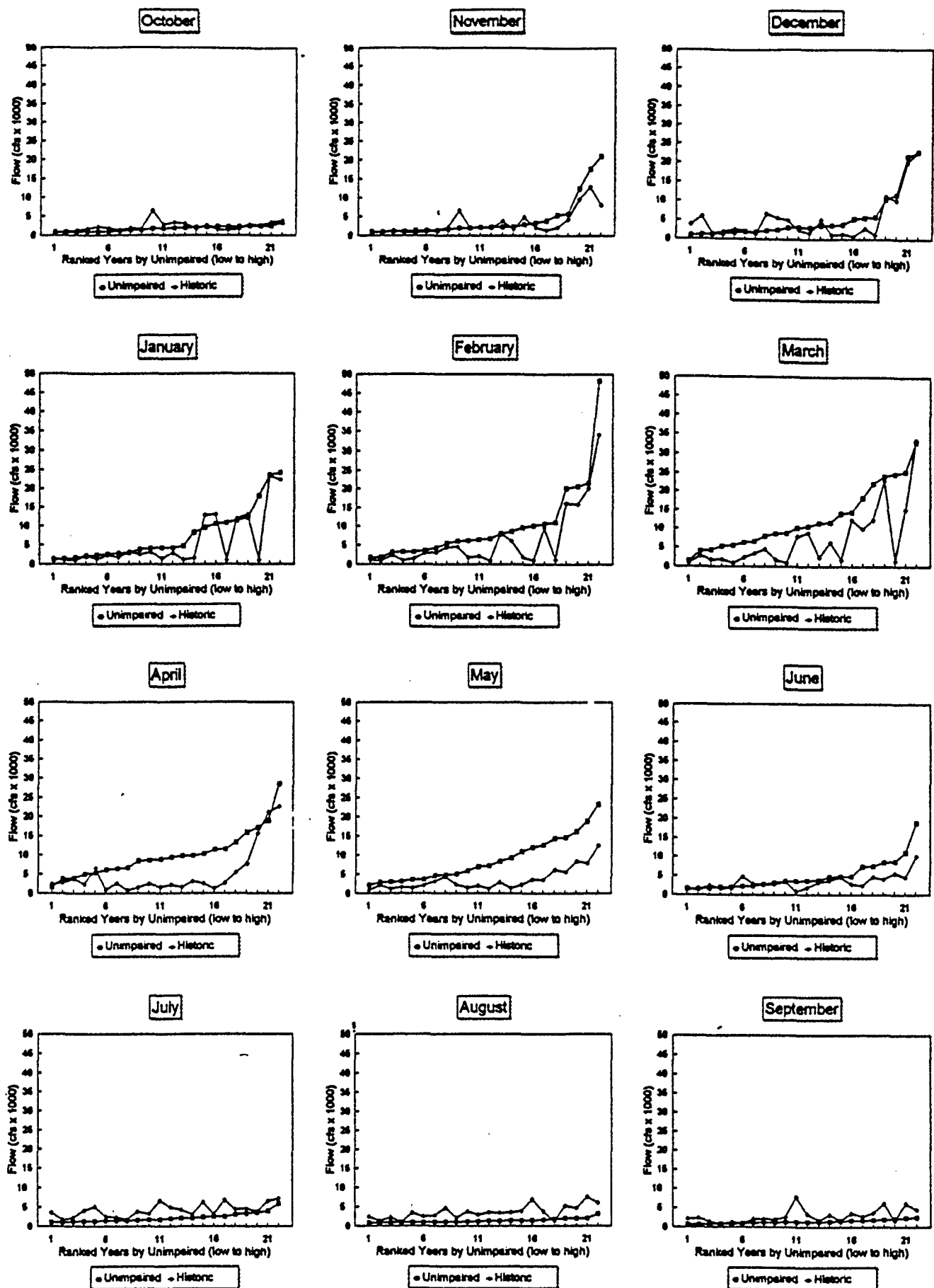


Figure S-5. Feather River Flow under Unimpaired and Historical Conditions (1972-1993)

Rivers	Description
Sacramento River Region	
Sacramento River	Keswick Dam downstream to Freeport
Clear Creek	Whiskeytown Dam downstream to the confluence with the Sacramento River
Minor Tributaries	Battle, Cow, Cottonwood, Paynes, Antelope, Mill, Deer, Elder, Thomes, Big Chico, Stony, and Butte Creeks; other tributaries, including intermittent streams
Feather River	Thermalito Dam downstream to the confluence with the Sacramento River
Yuba River	Englebright Lake downstream to the confluence with the Feather River
Bear River	Camp Far West Reservoir downstream to the confluence with the Feather River
American River	Nimbus Dam downstream to the confluence with the Sacramento River
San Joaquin River Region	
Mokelumne River	Camanche Reservoir downstream to the Sacramento-San Joaquin Delta; including the Cosumnes River and other tributaries
Calaveras River	New Hogan Lake downstream to the Sacramento-San Joaquin Delta
Stanislaus River	Goodwin Dam downstream to the confluence with the San Joaquin River
Tuolumne River	La Grange Dame downstream to the confluence with the San Joaquin River
Merced River	Crocker-Huffman Dam downstream to the confluence with the San Joaquin River
San Joaquin River	Friant Dam downstream to Vernalis

Table S-1. Rivers in the Sacramento River and San Joaquin River Regions

Reservoirs	Primary Water Source
Sacramento River Region	
Whiskeytown Lake	Trinity River (out of basin diversion) and Clear Creek
Shasta Lake	Sacramento River
Lake Oroville	Feather River
Bullards Bar Reservoir	Yuba River
Camp Far West Reservoir	Bear River
Folsom Lake	American River
San Joaquin River Region	
Camanche Lake	Mokelumne River
New Hogan Lake	Calaveras River
New Melones Reservoir	Stanislaus River
New Don Pedro Reservoir	Tuolumne River
Lake McClure	Merced River
San Luis Reservoir	Sacramento-San Joaquin Delta Diversion
Other Reservoirs	CALFED actions for new storage

Table S-2. Reservoirs in the Sacramento River and San Joaquin River Regions

Watershed Compartment	October			November			December			January			February			March			April			May			June				July		August	September
	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration		
Sacramento River	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Clear Creek	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Minor Tributaries	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Feather River	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Yuba River	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Bear River	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
American River	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Mokelumne River	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
Calaveras River	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
Stanislaus River	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
Tuolumne River	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
Merced River	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
San Joaquin River	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
Bay-Delta	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	

LEGEND:

● = Indicates primary occurrence.

○ = Indicates minor or potential occurrence.

LEGEND:
 ● - Indicates primary occurrence.
 ○ + Indicates minor or potential occurrence.

Table S-3. Geographic and Monthly Occurrence of Steelhead by Life Stage in the Sacramento-San Joaquin River System

Table S-4.

Geographic and Monthly Occurrence of Striped Bass by Life Stage in the Sacramento-San Joaquin River System

Watershed Compartment	Oct		Nov		Dec		Jan		February		March		April		May		June		July		August		Sept	
	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration
Sacramento River	○		○		○		○		○		○		○		○		○		○		○		○	
San Joaquin River	○		○		○		○		○		○		○		○		○		○		○		○	
Bay-Delta	●	○	●	○	●	○	●	○	●	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○

● = Indicates primary occurrence.

○ = Indicates minor or potential occurrence.

LEGEND:

Watershed Compartment	October			November			December			January			February			March			April			May		June		July		August		September	
	Adult Migration/Holding	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Spawning/Incubation	Fry Rearing	Adult Migration/Holding	Spawning/Incubation	Fry Rearing	Juvenile Migration	Adult Migration/Holding	Spawning/Incubation	Fry Rearing	Juvenile Migration	Adult Migration/Holding	Spawning/Incubation	Fry Rearing	Juvenile Migration	Adult Migration/Holding	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Spawning/Incubation	Juvenile Rearing	Adult Migration/Holding	Spawning/Incubation	Juvenile Rearing		
Sacramento River	●	●	○	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
Clear Creek	●	●		○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
Minor Tributaries	●	●		○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
Feather River	●	●	○	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
Yuba River	●	●		○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
Bear River	●	●		○	●	●			○	○	○	○	○	○	○	○	○	○	○	○	○			○							
American River	●	●		○	●	●		○	○	○	○	○	○	○	○	○	○	○	○	○	○			○						○	
Mokelumne River	●	○		○	●	●		○	○	○	○	○	○	○	○	○	○	○	○	○	○			○							
Calaveras River	●	○		○	●	●		○	○	○	○	○	○	○	○	○	○	○	○	○	○			○							
Stanislaus River	●	●		○	●	●		○	○	○	○	○	○	○	○	○	○	○	○	○	○			○							
Tuolumne River	●	●		○	●	●		○	○	○	○	○	○	○	○	○	○	○	○	○	○			○							
Merced River	●	●		○	●	●		○	○	○	○	○	○	○	○	○	○	○	○	○	○			○							
San Joaquin River	●			○	●			○			○	○	○	○	○	○	○	○	○	○	○			○							
Bay-Delta	●			○	●			○			○	○	○	○	○	○	○	○	○	○	○			○							

LEGEND:
● - Indicates primary occurrence.
○ - Indicates minor or potential occurrence.

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 ○ - Indicates minor or potential occurrence.

Table S-5. Geographic and Monthly Occurrence of Fall-Run Chinook Salmon by Life Stage in the Sacramento-San Joaquin River System

Watershed Compartment	October			November			December			January			February			March			April			May			June			July			August			September		
	Adult Migration/Holding	Spawning/Incubation	Juvenile Migration	Adult Migration/Holding	Spawning/Incubation	Fry Rearing	Adult Migration/Holding	Spawning/Incubation	Fry Rearing	Adult Migration/Holding	Spawning/Incubation	Fry Rearing	Adult Migration/Holding	Spawning/Incubation	Fry Rearing	Adult Migration/Holding	Spawning/Incubation	Fry Rearing	Adult Migration/Holding	Spawning/Incubation	Fry Rearing	Adult Migration/Holding	Spawning/Incubation	Fry Rearing	Adult Migration/Holding	Spawning/Incubation	Fry Rearing	Adult Migration/Holding	Spawning/Incubation	Fry Rearing	Adult Migration/Holding	Spawning/Incubation	Fry Rearing	Adult Migration/Holding	Spawning/Incubation	Fry Rearing
Sacramento River	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Clear Creek	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Minor Tributaries	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Feather River	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Yuba River	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Bear River	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
American River	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Mokelumne River	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Calaveras River	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Stanislaus River	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Tuolumne River	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Merced River	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
San Joaquin River	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Bay-Delta	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

LEGEND:
 ● = Indicates primary occurrence.
 ○ = Indicates minor or potential occurrence.

Table S-6. Geographic and Monthly Occurrence of Late-Fall-Run Chinook Salmon by Life Stage in the Sacramento-San Joaquin River System

Watershed Compartment	October				November				December				January				February				March				April				May				June				July				August				September																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	Adult Migration/Holding	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing	Juvenile Migration	Fr. Rearing	Spawning/Incubation	Juvenile Rearing

LEGEND:
 ● = Indicates primary occurrence.
 ○ = Indicates minor or potential occurrence.

Table S-7. Geographic and Monthly Occurrence of Spring-Run Chinook Salmon by Life Stage in the Sacramento-San Joaquin River System

Watershed Compartment	October			November			December			January			February			March			April			May			June			July			August			September		
	Fry Rearing	Juvenile Rearing	Juvenile Migration	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding	Juvenile Rearing	Juvenile Migration	Adult Migration/Holding
Sacramento River	○	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Clear Creek																																				
Minor Tributaries																																				
Feather River																																				
Yuba River																																				
Bear River																																				
American River																																				
Mokelumne River																																				
Calaveras River	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Stanislaus River																																				
Tuolumne River																																				
Merced River																																				
San Joaquin River																																				
Bay-Delta		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

LEGEND:
 ● - Indicates primary occurrence
 ○ - Indicates minor or potential occurrence.

Table S-8. Geographic and Monthly Occurrence of Winter-Run Chinook Salmon by Life Stage in the Sacramento-San Joaquin River System

Watershed Compartment	Oct	Nov	Dec	Jan	February				March				April				May				June		July		August		Sept
	Juvenile/Adult Rearing	Juvenile/Adult Rearing	Juvenile/Adult Rearing	Juvenile/Adult Rearing	Adult Migration	Spawning/Incubation	Larval Rearing	Juvenile/Adult Rearing	Adult Migration	Spawning/Incubation	Larval Rearing	Juvenile/Adult Rearing	Juvenile Migration	Adult Migration	Spawning/Incubation	Larval Rearing	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	
Sacramento River					●	○	○		●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Feather River					○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Merced River					○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
San Joaquin River					○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Bay-Delta	●	●	●	●	●			●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

LEGEND:
● - Indicates primary occurrence.
○ = Indicates minor or potential occurrence.

- Indicates primary occurrence.
 • Indicates minor or potential occurrence.
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Table S-9. Geographic and Monthly Occurrence of White Sturgeon by Life Stage in the Sacramento-San Joaquin River System

Watershed Compartment	Oct		Nov		Dec		Jan		Feb		March		April		May		June		July		August		Sept	
	Juvenile Migration	Juvenile Adult Rearing	Juvenile Migration	Juvenile Adult Rearing	Juvenile Migration	Juvenile Adult Rearing	Juvenile Migration	Juvenile Adult Rearing	Juvenile Migration	Juvenile Adult Rearing	Juvenile Migration	Juvenile Adult Rearing	Juvenile Migration	Juvenile Adult Rearing	Juvenile Migration	Juvenile Adult Rearing	Juvenile Migration	Juvenile Adult Rearing	Juvenile Migration	Juvenile Adult Rearing	Juvenile Migration	Juvenile Adult Rearing	Juvenile Migration	Juvenile Adult Rearing
Sacramento River	●	●	●	●	○	○					○	○			○	○	○	○	○	○	○	○	○	○
Feather River	●	●	●	●	○	○					○	○			○	○	○	○	○	○	○	○	○	○
Yuba River	●	●	●	●							○	○			○	○	○	○	○	○	○	○	○	○
American River	●	●	●	●							○	○			○	○	○	○	○	○	○	○	○	○
Mokelumne River	●	●	●	●							○	○			○	○	○	○	○	○	○	○	○	○
Stanislaus River	●	●	●	●							○	○			○	○	○	○	○	○	○	○	○	○
Bay-Delta	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

LEGEND:
 ● = Indicates primary occurrence.
 ○ = Indicates minor or potential occurrence.

Table S-10. Geographic and Monthly Occurrence of American Shad by Life Stage in the Sacramento-San Joaquin River System

Watershed Compartment	October		Nov		December		January		February		March		April		May		June		July		August		Sept
	Spawning/Incubation	Juvenile/Adult Rearing	Spawning/Incubation	Juvenile/Adult Rearing	Spawning/Incubation	Juvenile/Adult Rearing	Spawning/Incubation	Juvenile/Adult Rearing	Spawning/Incubation	Juvenile/Adult Rearing	Spawning/Incubation	Juvenile/Adult Rearing	Spawning/Incubation	Juvenile/Adult Rearing	Spawning/Incubation	Juvenile/Adult Rearing	Spawning/Incubation	Juvenile/Adult Rearing	Spawning/Incubation	Juvenile/Adult Rearing	Spawning/Incubation	Juvenile/Adult Rearing	
Bay-Delta	●	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○

LEGEND:

- - Indicates primary occurrence.
- - Indicates minor or potential occurrence.

● - Indicates primary occurrence.
 ○ - Indicates minor or potential occurrence.

Table S-11. Geographic and Monthly Occurrence of Delta Smelt by Life Stage in the Sacramento-San Joaquin River System

Table S-12. Geographic and Monthly Occurrence of Longfin Smelt by Life Stage in the Sacramento-San Joaquin River System

Watershed Compartment	Oct		Nov		December			January		February			March			April			May		June		July		August		Sept		
	Bay-Delta		Bay-Delta		Bay-Delta			Bay-Delta		Bay-Delta			Bay-Delta			Bay-Delta			Bay-Delta		Bay-Delta		Bay-Delta		Bay-Delta		Bay-Delta		
LEGEND:	Spawning/Incubation		Juvenile/Adult Rearing		Spawning/Incubation			Larval Rearing		Juvenile/Adult Rearing			Spawning/Incubation			Larval Rearing			Juvenile/Adult Rearing		Spawning/Incubation		Larval Rearing		Juvenile/Adult Rearing		Spawning/Incubation		Juvenile/Adult Rearing
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Watershed Compartment	Oct		Nov		December		January		February		March		April		May				June			July				August		Sept	
	Juvenile/Adult Rearing	Adult Migration	Juvenile/Adult Rearing	Adult Migration	Adult Migration	Spawning/Incubation	Juvenile/Adult Rearing	Juvenile Migration	Adult Migration	Spawning/Incubation	Larval Rearing	Juvenile/Adult Rearing	Juvenile Migration	Adult Migration	Spawning/Incubation	Larval Rearing	Juvenile/Adult Rearing	Juvenile Migration	Spawning/Incubation	Larval Rearing	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration	Juvenile/Adult Rearing	Juvenile Migration			
Sacramento River																													
San Joaquin River																													
Bay-Delta																													

LEGEND:

- Indicates primary occurrence.
- - Indicates minor or potential occurrence.

LEGEND:
 ● - Indicates primary occurrence.
 ○ - Indicates minor or potential occurrence.

Table S-13. Geographic and Monthly Occurrence of Sacramento Spittail by Life Stage in the Sacramento-San Joaquin River System

FISHERIES & AQUATIC RESOURCES

LIST OF PREPARERS

Warren Shaul

M.S., Fisheries, Oregon State University

B.S., Biology, Humboldt State University

Years of Experience: 24

Lead Preparer of Fisheries and Aquatic Resources Technical Report

Preparation of Fisheries and Aquatic Resources portion of PEIS/EIR

Bellory Fong

B.S., Biological Conservation, California State University, Sacramento

Years of Experience: 24 years

Team Leader-Fisheries impact analysis

Team Leader-Vegetation and Wildlife analysis

Alice F. Low

M.S., Ecology, California State University, San Diego

Years of experience: 15

Report preparation

Thomas Wegge

M.S., Environmental Economics, California State University, Fullerton

Years of experience: 19

Preparation of Fisheries and Aquatic Resources and Recreation Economics Technical Appendices

Loren Bottorff

M.S., Civil Engineering in Water Resources, University of Nevada, Reno

Years of Experience: 24

Development of Alternatives

Rick Breitenbach

M.S., Biological Conservation, California State University, Sacramento

Years of Experience: 25

Environmental Documentation Program Manager

Trina D. Farris

Years of Experience: 25

Text edits and preparation of figures and tables

Wendy S. Halverson Martin

B.S., Environmental Studies, California State University, Sacramento

Years of Experience: 17

Project Manager. Technical and Editorial preparation and review

Mark McCourt

B.A., Gonzaga University

Years of Experience: 16 months

Graphics

Ray McDowell

B.A., Geography, California State University, Sacramento

Years of Experience: 10

Environmental Specialist-Coordination of NEPA/CEQA documentation

Leslie Millett

B.S., Zoology, University of California, Berkeley

Years of Experience: 8

Report preparation and technical review

Frank Piccola

M.A., Government Administration, Rider University

B.S., Environmental Science, Rutgers University

AASc. Laboratory Technology, Middlesex County College

Years of Experience: 25

Environmental Manager-Coordination of NEPA/CEQA documentation

Susan L. Shanks

B.S., Wildlife & Fisheries Biology, University of California, Davis

Years of Experience: 8 months

Report preparation and technical review